

Dynamic Design: The Cleanroom

Putting It All Together

SCORING RUBRIC

Planning

	4	3	2	1
Materials needed based on array map. Tools and component parts are accounted for in the planning process.	<ul style="list-style-type: none"> Planning takes into account all materials and tools needed. Plans include accounting for all materials at all stages of project. 	<ul style="list-style-type: none"> Planning takes into account most of the materials but not at necessarily at all stages of project 	<ul style="list-style-type: none"> Planning takes into account some of the materials but there is a poor accounting system throughout the project. 	<ul style="list-style-type: none"> Many necessary materials are not included. There is no way to track materials throughout the project.
Stages of project: <ul style="list-style-type: none"> Obtaining correct number and type of material. Washing tools, screws and retainers. Cutting out the correct number of each type of wafer. Assembly 	<ul style="list-style-type: none"> All stages are included in planning. There are very detailed procedures for each of the categories. Plans include places for recording comments and places for responsible group members to sign. 	<ul style="list-style-type: none"> All of the stages are included, however the level of detail for completing each of the stages is not adequate for completing each stage. 	<ul style="list-style-type: none"> All of the stages are included. There is no plan under each category. 	<ul style="list-style-type: none"> Most of the stages of the project are included, but one or more step is missing.

Washing

	4	3	2	1
Washing Procedure: <ul style="list-style-type: none"> Gloves worn. Hot soapy water one tub. Clean water in the other tub. First side rubbed 10 times. Second side gets rubbed 10 times. Placed in rinse tub. Repeat. Change water. Repeat. Cascade Tank 	<ul style="list-style-type: none"> All students participate by demonstrating and describing each step in the washing procedure. 	<ul style="list-style-type: none"> Most students participate by demonstrating or describing most of the steps in the washing procedure. 	<ul style="list-style-type: none"> Some of the students participate by describing some of the steps in the washing procedure. 	<ul style="list-style-type: none"> One student shows some of the steps of the procedure.
Knowledge of Washing Details: <ul style="list-style-type: none"> Water Temperature (65 degrees Celsius). Soap breaks surface tension. Keep it wet. Don't let it dry with soap on it. 	<ul style="list-style-type: none"> The students in the group know all four of the washing details. 	<ul style="list-style-type: none"> The students know three of the four washing details. 	<ul style="list-style-type: none"> The students know two of the four washing details. 	<ul style="list-style-type: none"> The students know one of the washing details.

Assembly



	4	3	2	1
Assembly Procedure: <ul style="list-style-type: none">• The array is assembled in the vertical position.• Three roles are demonstrated.<ul style="list-style-type: none">- wafer holder- retainer holders- screws• Gloves are worn and proper tools are used.• Sequence<ul style="list-style-type: none">- bottom retainers- wafer placement- top retainer- screw	<ul style="list-style-type: none">• All three roles are demonstrated throughout the simulation.• Gloves are worn at all times.• Array is vertical during assembly.• Proper tools are used when holding parts.• The proper sequence is demonstrated.	<ul style="list-style-type: none">• All three roles are demonstrated most of the time.• Gloves are worn at all times.• Array is vertical during assembly.• Proper tools are used most of the time when holding parts.• The sequence is close to being correct.	<ul style="list-style-type: none">• The three roles are demonstrated during some of the simulation.• Gloves are worn most of the time.• Array is vertical during assembly.• Tools were used sometimes but there were times when wrong tools or no tools were used.• The sequence is not correct most of the time.	<ul style="list-style-type: none">• The roles are not demonstrated during the simulation.• Gloves are not worn.• Tools were used at times.• No sequence is shown.• Wafers are just placed on the frame.

Product

	4	3	2	1
<ul style="list-style-type: none">• The frame is assembled such that the wafers are in the same sequence as the map.• The map has clearly a clearly identified key.• Silicon is on the outer border of the frame.• No two wafers are touching.	<ul style="list-style-type: none">• Array frame matches perfectly with the map.• Map has a key that makes identifying the different materials easy on the array.• Silicon is on the outer border of the array.• No wafers are touching their neighbors.	<ul style="list-style-type: none">• Array frame matches the map for the most part.• There may be one or two wafers out of place.• Silicon is on the outer border in the majority of the frame.• Most wafers are not touching their neighbor.	<ul style="list-style-type: none">• There are several inconsistencies with the map.• Several non-silicon wafers are located on the border of the array.• Several wafers are touching their neighbor.	<ul style="list-style-type: none">• The array frame does not match the attached map.• There are very few silicon wafers on the outer border of the array.• Most wafers are touching their neighbor.